

## CLAIMS

What is claimed is:

1. The method of building a tire carcass on a first stage tire building drum comprises the steps of:
  - applying unvulcanized tire building components on the first stage tire building drum to form a cylindrically shaped unvulcanized tire carcass having carcass ends;
  - placing a pair of tire apex and bead subassemblies in parallel relation around the first stage drum in spaced relation from the cylindrical tire carcass thereon, such that the carcass ends of the tire carcass extend laterally beyond the apex and bead subassemblies;
  - locking the beads by radially expanding bead lock mechanisms forcing the carcass into engagement with the beads; moving the carcass radially outwardly between the bead locks by radially expanding a central segment support mechanism including a plurality of central support segments that are covered by an inflatable pair of turnup bladders while simultaneously axially inwardly moving the pair of bead locks;
  - turning up the tire carcass ends following a radially outward extending contour at least halfway along the apex and bead subassemblies to an axially inwardly extending end;
  - stitching the turnups to form a partially radially extending turnup.
2. The method of claim 1 further comprises inflating through the central segment support mechanism to toroidally shape the carcass.
3. The method of claim 1 wherein the step of moving the carcass radially outwardly between the bead locks includes moving the segments a distance D, D being at least 30 mm.
4. The method of claim 3 wherein each of the bead locks moves a distance axially inwardly equal to the radial movement of the central support segments.

5. A tire building drum comprising:
  - A pair of inflatable turnup bladders
  - a central segment support mechanism having a plurality of radially expandable segments covered by the inflatable pair of turnup bladders
  - a pair of bead locks
  - a pair of support rings, each support ring being positioned between the radially expandable segments and a bead lock and wherein as the segments expand and the bead locks move axially inwardly the support rings move under the segments.
6. A rotatable tire building drum having an axis of rotation comprising:
  - a central screw;
  - a radially expandable central segment support mechanism the central segment support mechanism having a plurality of radially movable rigid segments connected to an axially movable one mechanism and an inflatable pair of turnup bladders covering the segments;
  - a pair of pneumatic or fluid driven bead lock mechanisms, each bead lock mechanism being mounted on axially movable housings connected to the central screw and in the drum retracted position being spaced a distance G from an end of the central segment support mechanism;
  - a means for providing pneumatic or fluid driven motion;
  - a means for rotating the drum;
  - a pair of axially movable annular support rings, one support ring being interposed between each bead lock mechanism and the central segment support mechanism in the fully retracted and axially opened building drum position and as the bead locks in the radially expanded bead lock position move axially inwardly the central segment support mechanism radially expands and each annular support ring moves axially inwardly under the radially expanded segments of the central segment support mechanism.